

LIST OF OREGON SCOLYTIDAE (COLEOPTERA) AND NOTES ON NEW RECORDS

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ABSTRACT.—Listed are 121 species of Scolytidae from Oregon. Ten species are reported from Oregon for the first time: *Hylastes tenuis* Eichhoff, *Phloeosinus scopulorum scopulorum* Swaine, *Phloeosinus hoferi* Blackman, *Trypodendron betulae* Swaine, *Xyleborus xylographus* (Say), *Trypophloeus striatulus* (Mannerheim), *T. thatcheri* Wood, *Procreaphalus mucronatus* (LeConte), *Pityophthorus scalptor* Blackman, and *Monarthrum dentigerum* (LeConte). The second Oregon specimen of an exotic species, *Xyleborus californicus* Wood, is reported also.

Key words: Scolytidae, faunal list, Oregon.

Oregon is a large state with diverse vegetation that occurs there due largely to the wide range of physical and climatic environments. The climate results in part from the interplay between maritime and continental air masses and the intervening Cascade Mountain Range that divides the state into distinct western (maritime) and eastern (continental) regions (Franklin and Dyrness 1973). For example, average annual precipitation varies from approximately 60–300 cm west of the Cascades to 20–100 cm eastward.

The exceptionally diverse forests of southwestern Oregon have an affinity with California, whereas those of northeastern Oregon are related to Rocky Mountain forest types. Because Scolytidae are host-specific to some degree, their distribution in Oregon is linked closely to the distribution of species of trees and shrubs.

Oregon scolytids were listed by Chamberlin (1917), but that list is greatly out of date. We herein update the list to include records and synonymies published by Wood (1952). Similar lists have been published recently for Idaho (Furniss and Johnson 1987) and Montana (Gast et al. 1989).

Six species not previously reported from Oregon were collected by us on field trips in 1990, and four species were found among museum specimens. More species will surely be

found by further collecting. They likely will include more *Pityophthorus*, a genus that is relatively rich in species in western forests and elsewhere; and species of other genera from the diverse California fauna (Bright and Stark 1973) that infest trees endemic to both states.

Other new scolytids are likely to be introduced accidentally by commerce. For example, the exotic *Xyleborus affinis* Eichhoff was intercepted in 1961 at Portland in *Dracaena massangeana* from Puerto Rico. Of the 121 species listed here, 8 are clearly exotics that have become established at unknown times: *Hylastinus obscurus* (Marsham), *Scolytus rugulosus* (Müller), *S. multistriatus* (Marsham), *Xyleborus dispar* (Fabricius), *X. xylographus* (Say), *X. californicus* Wood, *Xyleborinus saxeseni* (Ratzeburg), and *Monarthrum dentigerum* (LeConte). Of these, *X. californicus* was known heretofore in Oregon from only one specimen (Wood 1952); a second specimen was caught (by JBJ) in flight after sunset, 6-VIII-1990, Champoeg State Park, Marion Co. It probably was introduced by commerce at Portland, although its native range is still unknown. We speculate that it may infest distressed deciduous trees along the Willamette River.

By their habits, Oregon Scolytidae are characterized as true bark beetles, living in cambium (105 species); ambrosia beetles, living in xylem although they may feed entirely or partly on

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fungi that they transmit (14 species), living in pine cones (*Conophthorus ponderosae* Hopkins), or living in roots of clover (*H. obscurus*). Conifers are hosts of 98 species, while the other 23 species occur in angiosperms.

Abbreviations of repositories listed for specimens new to Oregon are: ODAC = Oregon Department of Agriculture collection, Salem; PNW = Pacific Northwest Forest and Range Experiment Station collection, Forest Service, USDA, Corvallis, Oregon; WFBM = W. F. Barr Entomological Museum, University of Idaho, Moscow, Idaho; and SLW = Stephen L. Wood collection, Brigham Young University, Provo, Utah.

SPECIES NEW TO OREGON

Subfamily Hylesiniinae

Hylastes tenuis Eichhoff

BIOLOGY.—Monogynous. Infests *Pinus* spp., presumably the roots.

DISTRIBUTION AND NOTES.—MEXICO: Hidalgo and Mexico (state); USA: Mass. to Fla., all southern states westward to Calif., and Ida. OREGON: Eugene, Lane Co., 22-IX-1971, black light trap, K. J. Goeden (1 ODAC). Prineville, Crook Co., 25-VII-1934 (1 PNW), VIII-1935 (1 PNW). *Pinus ponderosa*, Hopk. 18960-83, W. J. Buckhorn (paratypes of the synonym, *H. minutus* Blackman).

Phlocosinus scopulorum scopulorum Swaine

BIOLOGY.—Monogynous. Infests stems of *Juniperus scopulorum*. Galleries parallel to grain with a nuptial chamber just above the entrance, appearing as though the chamber were halved and one side shifted forward half its diameter (Bright 1976, Fig. 182).

DISTRIBUTION AND NOTES.—CANADA: Alta., B.C.; USA: Wash. OREGON: Sisters, Deschutes Co., 8-V-1975, *Juniperus* sp., R. L. Penrose (4 ♀, 3 ♂ ODAC). Canby, Klackamas Co., April 15, 1965, K. J. Goeden (1 ♂ ODA). North Plains, Washington Co., 20-IV-1969, *Thuja plicata*, K. J. Goeden (2 ♂, 1 ♀ ODA, 2 ♂ SLW). Portland, Multnomah Co., 22-X-1971, *Chamaecyparis lawsoniana*, R. L. Westcott (1 ♀, 1 ♂ ODA, 1 ♀ SLW). Northbend, Coos Co., 9-VI-1974, on cypress, J. McLaughlin. (3 ♀ ODA).

Phlocosinus hoferi Blackman

BIOLOGY.—Monogynous. Infests branches of *Juniperus deppeana*, *J. osteosperma*, and *J. scopulorum*.

DISTRIBUTION AND NOTES.—CANADA: B.C.; USA: all western states except Wash. OREGON: about 9 km W Enterprise, Wallowa Co., 9-XI-1990, *Juniperus scopulorum*, M. M. Furniss and A. Equihua (12 ♀, 5 ♂ WFBM). Infesting branches, 0.5–3.0-cm diameter, of a small standing tree. Larvae parasitized by an abundant braconid wasp, *Ecphyllus* sp., probably *californicus* Rohwer. Host is restricted in Oregon to the vicinity of the Wallowa River, for a distance of approximately 30 km downstream from Enterprise.

Subfamily Scolytinae

Trypodendron betulae Swaine

BIOLOGY.—Monogynous. Infests *Betula* spp., rare in *Alnus* spp. Tunnels are constructed by females radially into sapwood. Other females construct branches from the radially aligned tunnel at close intervals, left or right, in the horizontal plane. Eggs are laid in niches oriented above and below the gallery. Larvae excavate short cradles in which they develop and feed on ambrosia fungus. Males are active in keeping the tunnels clean and aerated.

DISTRIBUTION AND NOTES.—CANADA: Alta., B.C., Man., N.B., N.S., N.W.T., Ont., Que.; USA: Ida., Me., Mass., Minn., Mont., N.H., N.J., N.Y., S.D., Wisc. OREGON: Mill Creek, Umatilla Co., 8-XI-1990, *Betula papyrifera*, M. M. Furniss and A. Equihua (1 ♀, 3 ♂ WFBM, 1 ♀, 1 ♂ ODAC). Infesting lower stem of a 23-cm-diameter wind-felled tree. Also present were *Xyleborus dispar* (Fabricius) and *Xyleborinus saxesceni* (Ratzeburg).

Xyleborus xylographus (Say)

BIOLOGY.—Unstudied. In species of this genus that are studied, haploid males are produced parthenogenetically. They are dwarfed and flightless. Diploid females are produced by mating between siblings or between a female parent and a male offspring. Infests *Quercus* spp., rare in other hardwoods. The galleries are made obliquely into sapwood in a horizontal plane to a depth of an inch or more, after which they branch, the arms following the annual rings (Beal and Massey 1945).

DISTRIBUTION AND NOTES.—CANADA: Ont., Que.; USA: twenty-two states (and D.C.) east of 100th meridian; Calif. (1 specimen), Tex. OREGON: 5 km NW Newberg, Yamhill Co., 20-VI-1970, black light trap, K. J. Goeden (1 ODAC).

Trypophloeus striatulus (Mannerheim)

BIOLOGY.—Monogynous. Infests outer bark of *Salix* spp., most commonly *S. scouleriana*; also recorded from *Abies* spp. May reinfest stem progressively downward for several generations. Cave type egg gallery; larvae mine shallowly under bark.

DISTRIBUTION AND NOTES.—CANADA: Newf., N.S., Que., Yukon; USA: Alas., Colo., Ida., Mim., Ut. OREGON: Hot Springs Campground, Hart Mtn. Natl. Antelope Refuge, Lake Co., 14-VIII-1990, *Salix scouleriana*, M. M. Furniss and J. B. Johnson (34 WFBM, 5 ODAC). Infesting necrotic bark lesions in a live stem having a deep frost crack. Diameter of infested part: 5-10 cm. Mature larvae present.

Trypophloeus thatcheri Wood

BIOLOGY.—Monogynous. Infests outer bark of standing, unhealthy or dying *Populus tremuloides*. Cave type egg gallery; larval mines confined to outer bark.

DISTRIBUTION AND NOTES.—CANADA: B.C.; USA: Calif., Ida. OREGON: Hot Springs Campground, Hart Mtn. Natl. Antelope Refuge, Lake Co., 14-VIII-1990, *Populus tremuloides*, M. M. Furniss and J. B. Johnson (27 WFBM, 5 ODAC). Adults attacking and walking on bark of a dying, 15-cm-diameter tree.

Procyphalus mucronatus (LeConte)

BIOLOGY.—Monogynous. Infests *Populus tremuloides*. Prefers soft, fermenting, dead bark; usually follows primary invasion by *Trypophloeus populi* Hopkins (Petty 1977). The gallery is narrower and the bark overlying the gallery is thicker than that of *T. populi* Hopkins (and presumably *T. thatcheri*). One and one-half to two annual generations (Utah), overwintering as larvae and adults. Eggs appear first in late May.

DISTRIBUTION AND NOTES.—CANADA: Alta., B.C.; USA: Alas., Colo., Ida., Mont., Nev., N.M., Ut. OREGON: Hot Springs Campground, Hart Mtn. Natl. Antelope Refuge, Lake Co., 14-VIII-1990, *Populus tremuloides*, M. M. Fur-

niss and J. B. Johnson (9 WFBM). Infesting stem of a 26-cm-diameter tree. Jackman Park, Steens Mtn., Harney Co., 14-VIII-1990, *Populus tremuloides*, M. M. Furniss and J. B. Johnson (14 WFBM, 10 ODAC). Attacking lower stem of a 25-cm-diameter dead tree (foliage shed, bark moist).

Pityophthorus scalptor Blackman

BIOLOGY.—Presumably polygynous. Infests small branches of living pines.

DISTRIBUTION AND NOTES.—CANADA: B.C.; USA: Calif., Ida. OREGON: 15 km N Palmer-Junction, Union Co., 16-VIII-1990, *Pinus ponderosa*, M. M. Furniss and J. B. Johnson (2 ♀, 2 ♂ WFBM). Infesting 1-cm-diameter freshly faded lower branch on a live, merchantable tree. Each gallery contained only one female and one male, no eggs or larvae; they appeared destined to overwinter before reproducing.

Monarthrum dentigerum (LeConte)

BIOLOGY.—Not studied. Infests *Quercus* spp. Most species of *Monarthrum* are polygynous and their galleries branch from a radially oriented entrance tunnel in the xylem. Larvae of this genus develop in niches, apparently feeding on a mixture of ambrosial fungus that grows on gallery walls and xylem of the host tree.

DISTRIBUTION AND NOTES.—MEXICO: Baja California; USA: Ariz., Calif., Tex. OREGON: Medford, Jackson Co., 18-VIII-1968, black light trap (1 ODAC).

OREGON SCOLYTIDAE

HYLESININAE

Hylastini

- Sciurus amictosus* LeConte
- Hylurgops porosus* (LeConte)
- Hylurgops reticulatus* Wood
- Hylurgops rugipennis rugipennis* (Mannerheim)
- Hylurgops subcostulatus subcostulatus* (Mannerheim)
- Hylastes gracilis* LeConte
- Hylastes longicollis* Swaine
- Hylastes macer* LeConte
- Hylastes nigrinus* (Mannerheim)
- Hylastes ruber* Swaine
- Hylastes tenuis* Eichhoff

Hylesinini

- Hylastinus obscurus* (Marshall)
- Hylesinus californicus* (Swaine)
- Hylesinus oregonus* (Blackman)
- Abiiphagus aspericollis* (LeConte)
- Abiiphagus hirsutus* Schedl

Tomicini

- Xylechinus montanus* Blackman
Pseudohylesinus dispar dispar Blackman
Pseudohylesinus dispar pullatus Blackman
Pseudohylesinus granulatus (LeConte)
Pseudohylesinus nebulosus nebulosus (LeConte)
Pseudohylesinus nobilis Swaine
Pseudohylesinus pini Wood
Pseudohylesinus sericeus (Mannerheim)
Pseudohylesinus sitchensis Swaine
Pseudohylesinus tsugae Swaine
Dendroctonus brevicornis LeConte
Dendroctonus jeffreyi Hopkins
Dendroctonus ponderosae Hopkins
Dendroctonus pseudotsugae Hopkins
Dendroctonus rufipennis (Kirby)
Dendroctonus valens LeConte

Phloeotribini

- Phloeotribus lecontei* Schedl

Phlocosinini

- Phlocosinus antennatus* Swaine
Phlocosinus cypressi Hopkins
Phlocosinus fulgens Swaine
Phlocosinus hoferi Blackman
Phlocosinus punctatus LeConte
Phlocosinus scopulorum scopulorum Swaine
Phlocosinus sequoiae Hopkins
Phlocosinus serratus (LeConte)
Phlocosinus vandykei Swaine

Hypohorini

- Chaetophloeus heterodoxus* (Casey)

Polygraphini

- Carpophorus intermedius* Wood
Carpophorus piecae Wood
Carpophorus pinicoleus Wood
Carpophorus ponderosae Swaine
Carpophorus sansoni Swaine
Carpophorus vandykei Bruck
Polygraphus rufipennis (Kirby)

SCOLYTINAE

Scolytini

- Scolytus laricis* Blackman
Scolytus monticolae Swaine
Scolytus multistriatus (Marshall)
Scolytus opacus Blackman
Scolytus oregoni Blackman
Scolytus piecae (Swaine)
Scolytus praeceps LeConte
Scolytus rugulosus (Müller)
Scolytus subscaber LeConte
Scolytus tsugae (Swaine)
Scolytus unispinosus LeConte
Scolytus ventralis LeConte

Mieracini

- Hyllocurus hirtellus* (LeConte)

Crypturgini

- Dohrurgus pumilis* (Mannerheim)
Crypturgus borealis Swaine

Dryocoetini

- Dryocoetes affaber* (Mannerheim)
Dryocoetes autographus (Ratzeburg)
Dryocoetes confusus Swaine
Dryocoetes sechelti Swaine

Ipini

- Pityogenes carinulatus* (LeConte)
Pityogenes fossifrons (LeConte)
Pityogenes kuechleri Swaine
Pityokteinus elegans Swaine
Pityokteinus lasiocarpi (Swaine)
Pityokteinus minutus (Swaine)
Pityokteinus ornatus (Swaine)
Orthotomicus caclatus (Eichhoff)
Ips concinnus (Mannerheim)
Ips emarginatus (LeConte)
Ips integer (Eichhoff)
Ips latidens (LeConte)
Ips mexicanus (Hopkins)
Ips montanus (Eichhoff)
Ips paraconfusus Lanier
Ips pini (Say)
Ips plastographus maritimus Lanier
Ips plastographus plastographus (LeConte)
Ips tridens engelmanni Swaine
Ips tridens tridens (Mannerheim)

Xyloterini

- Trypodendron betulae* Swaine
Trypodendron lineatum (Olivier)
Trypodendron retusum (LeConte)
Trypodendron rufitarsis (Kirby)

Xyleborini

- Xyleborus californicus* Wood
Xyleborus dispar (Fabricius)
Xyleborus intrusus Blandford
Xyleborus xylographus (Say)
Xyleborinus saxoseni (Ratzeburg)

Cryphalini

- Trypophloeus salicis* Hopkins
Trypophloeus striatulus (Mannerheim)
Trypophloeus thatcheri Wood
Procryphalus mucronatus (LeConte)
Procryphalus utahensis Hopkins
Cryphalus pubescens Hopkins
Cryphalus ruficollis ruficollis Hopkins

Corthylini

- Pseudopityophthorus pubipennis* (LeConte)
Conophthorus ponderosae Hopkins
Pityophthorus boycei Swaine
Pityophthorus confertus Swaine
Pityophthorus confinis LeConte
Pityophthorus digestus (LeConte)
Pityophthorus eclatus Blackman
Pityophthorus jeffreyi Blackman
Pityophthorus nurayanae Blackman
Pityophthorus nitidulus (Mannerheim)
Pityophthorus nitidus Swaine
Pityophthorus pseudotsugae Swaine
Pityophthorus sculptor Blackman
Pityophthorus toralis Wood
Pityophthorus tuberculatus Eichhoff
Gnathotrichus retusus (LeConte)
Gnathotrichus sulcatus (LeConte)
Monarthrum dentigerum (LeConte)
Monarthrum scutellare (LeConte)

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USDA Forest Service, LaGrande, Oregon, segregated undetermined Scolytidae in the PNW collection. Locations of *Betula papyrifera*, host of *Trypodendron betulae* Swaine, and *Juniperus scopulorum*, host of *Phloeosinus hoferi* Blackman, were provided by Charles Johnson, USDA Forest Service, Baker, Oregon. The manuscript was reviewed by Frank W. Merickel, University of Idaho, and Dr. Stephen L. Wood, Brigham Young University, Provo, Utah, who also identified *X. californicus*, *X. xylographus*, and *P. s. scopulorum* other than those collected by us. This is University of Idaho Agriculture Experiment Station Research Paper No. 92714.

LITERATURE CITED

- BEAL, J. A., AND C. L. MASSEY. 1945. Bark beetles and ambrosia beetles (Coleoptera: Scolytidae) with special reference to species occurring in North Carolina. Duke University School of Forestry Bulletin 10, 175 pp.
- BRIGHT, D. E., JR. 1976. The bark beetles of Canada and Alaska. The insects and arachnids of Canada. Part 2. Biosystematics Research Institute, Research Board, Canada Department of Agriculture Publication 1576: 1-241.
- BRIGHT, D. E., JR. AND R. W. STARK. 1973. The bark and ambrosia beetles of California. Coleoptera: Scolytidae and Platypodidae. Bulletin of the California Insect Survey, Vol. 16, 169 pp.
- CHAMBERLIN, W. J. 1917. An annotated list of the scolytid beetles of Oregon. Canadian Entomologist 49: 321-325, 353-356.
- FRANKLIN, J. F., AND C. T. DYRNES. 1973. Natural vegetation of Oregon and Washington. USDA Forest Service General Technical Report PNW-5. Portland, Oregon, 417 pp.
- FURNISS, M. M., AND J. B. JOHNSON. 1957. List of Idaho Scolytidae (Coleoptera) and notes on new records. Great Basin Naturalist 47: 375-382.
- GAST, S. J., M. M. FURNISS, J. B. JOHNSON, AND M. A. KIE. 1959. List of Montana Scolytidae (Coleoptera) and notes on new records. Great Basin Naturalist 49: 381-386.
- PETTY, J. L. 1977. Bionomics of two aspen bark beetles, *Trypophloeus populi* and *Procryphalus mucronatus* (Coleoptera: Scolytidae). Great Basin Naturalist 37: 105-127.
- WOOD, S. L. 1952. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoirs No. 6, 1359 pp.

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